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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,656	10/30/2003	Terry Tarn	P106-US	3766
26148	7590	03/09/2005	EXAMINER	
REFLECTIVITY, INC. 350 POTRERO AVENUE SUNNYVALE, CA 94085			MANDALA, VICTOR A	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/698,656

Applicant(s)

TARN

Examiner

Victor A. Mandala Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 December 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21, 23-37 and 39-55 is/are pending in the application.
- 4a) Of the above claim(s) 9-14, 19-21, 23-37, 39-42, 46-48 and 51-55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8, 43-45, 49, & 50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Response to Amendment***

1. Newly submitted and drafted claims from the 112 rejection, claims 6, 9, 20, 35-37, 46-48, & 51-55 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

The elected species does not teach an adhesive material used to bond the insert, semiconductor, and package substrates together. The elected species also does not teach electrodes that are near the micromirrors. The elected species also does not teach the insert substrate to be made out of multiple substrates.

Accordingly, claims, 9, 20, 35-37, 46-48, & 51-55 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-8, 20, 35, & 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0146200 Kudrle et al. in view of U.S. Patent Application Publication No. 2004/0119143 Karpmen.

Claims 1-5, 7-8, & 43 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.

Patent Application Publication No. 2002/0146200 Kudrle et al.

2. Referring to claim 1, a packaged microelectromechanical device, comprising: a microelectromechanical array device, (Kudrle et al. Figure 21 & 23C MEMS Die and Karpmen Figure 2 #16), that comprises a semiconductor substrate, (Kudrle et al. Figures 21 & 23C #404 Paragraph 0146 Lines 1-4 and Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4); a package for the microelectromechanical array device, (Kudrle et al. Figure 21 & 23C MEMS Die and Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4), the package comprising a packaging substrate, (Kudrle et al. Figure 23C Heat sink and Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7); an insert substrate, (Kudrle et al. Figure 23 C ceramic substrate and Karpmen Figure 2 #24 Paragraph 0023 Lines 1-2), that is disposed between the semiconductor substrate, (Kudrle et al. Figures 21 & 23C #404 and Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4), and the package substrate, (Kudrle et al. Figure 23C Heat sink and Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7); and wherein the insert substrate, (Kudrle et al. Figure 23 C ceramic substrate and Karpmen Figure 2 #24 Paragraph 0023 Lines 1-2), has a CTE value that is the same as the CTE value of the semiconductor substrate, (Kudrle et al. Figures 21 & 23C #404 Paragraph 0146 Lines 1-4 and Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4), or between the value of the semiconductor substrate, (Kudrle et al. Figures 21 & 23C #404 Paragraph 0146 Lines 1-4 and Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4), and a CTE value of the package substrate, (Kudrle et al. Figure 23C Heat sink and Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7).

\*\* Kudrle et al. teaches all of the claimed matter in claim 1, but is silent on the CTE values of the semiconductor, insert, and packaging substrates. Karpmen teaches the CTE values of a

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semiconductor, insert, and packaging substrates for a MEMS device. It would have been obvious to one having skill in the art at the time the invention was made to combine the teachings of Karpmen with the teachings of Kurdle et al. because the CTE values of the substrates affect the performance of sensitive MEMS devices, where the thermal expansion could cause flexures that would effect the mass of the MEMS device creating improper and/or poor operation, (Karpmen Paragraphs 0021-0022).

3. Referring to claim 2, a device, wherein the semiconductor substrate is silicon, (Kudrle et al. Figures 21 & 23C #404 Paragraph 0146 Lines1-4 and Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4).

4. Referring to claim 3, a device, wherein the microelectromechanical array comprises a light transmissive substrate, (Kudrle et al. Figures 23C Antireflection coated window Paragraph 0152), bonded to the semiconductor substrate, (Kudrle et al. Figures 21 & 23C #404 Paragraph 0146 Lines1-4 and Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4).

5. Referring to claim 4, a device, wherein the light transmissive substrate is glass or quartz, (Kudrle et al. Figures 23C Antireflection coated window Paragraph 0152).

6. Referring to claim 5, a device, wherein the microelectromechanical array comprises a plurality of micro mirrors, (Kudrle et al. Figures 23C MEMS die) formed on the light transmissive substrate, (Kudrle et al. Figures 23C Antireflection coated window Paragraph 0152).

7. Referring to claim 7, a device, wherein at least 500,000 micro mirrors, (Kudrle et al. Figure 21 & 23C MEMS Die), are disposed on the light transmissive substrate, (Kudrle et al.

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Figures 23C Antireflection coated window Paragraph 0152 and Kudrle et al. is not limited to a maximum amount of mirrors).

8. Referring to claim 8, a device, wherein the microelectromechanical array, (Kudrle et al. Figures 21 not labeled, but can be seen), is formed directly on the semiconductor substrate, (Kudrle et al. Figures 21 & 23C #404 Paragraph 0146 Lines 1-4 and Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4).

9. Referring to claim 43, a device, wherein the package substrate is ceramic, (Kudrle et al. Figure 23C Heat sink and Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 44, 45, 49, & 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/0119143 Karpmen in view of U.S. Patent Application Publication No. 2002/0146200 Kudrle et al.

10. Referring to claim 44, a package microelectromechanical device, comprising: a microelectromechanical array device that comprises a semiconductor substrate, (Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4); a package substrate, (Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7), having a cavity in which the microelectromechanical array device is disposed; and an

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insert substrate, (Karpmen Figure 2 #24 Paragraph 0023 Lines 1-2), that is disposed between the semiconductor substrate, (Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4), and the package substrate, (Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7).

\*\*\* Karpmen teaches the claimed invention except for the microelectromechanical device to be an array. It would have been obvious to one having skill in the art at the time the invention was made to make an array of microelectromechanical devices, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. vs. Bomis Co.* 193USPQ8

Kurdle et al. teaches the use of a microelectromechanical device array, which it would have been obvious to one having skill in the art to know that it is well known to duplicate.

11. Referring to claim 45, a device, wherein the package substrate is ceramic, (Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7).

12. Referring to claim 49, a packaged microelectromechanical device, comprising: a microelectromechanical array device that composes a semiconductor substrate, ( Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4); a ceramic package substrate, (Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7), having a supporting surface; and an insert substrate, (Karpmen Figure 2 #24 Paragraph 0023 Lines 1-2), that is disposed between the semiconductor substrate, (Karpmen Figure 2 #16 Paragraph 0019 Lines 3-4), and the supporting surface of the ceramic package substrate, (Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7).

13. Referring to claim 50, a device, wherein the supporting surface is within a cavity of the ceramic package substrate, (Karpmen Figure 2 #12 Paragraph 0022 Lines 6-7).

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor A Mandala Jr. whose telephone number is (571) 272-1918. The examiner can normally be reached on Monday through Thursday from 8am till 6pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VAMJ  
3/5/05

NATHAN J. FLYNN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

